AAF

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,369	02/13/2004	Robert J. Hariri	9516-141-999	2020

20583 7590 11/07/2005

JONES DAY
222 EAST 41ST ST
NEW YORK, NY 10017

EXAMINER	
BARNHART, LORA ELIZABETH	
ART UNIT	**PAPER NUMBER**
1651	

DATE MAILED: 11/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/779,369	HARIRI, ROBERT J.	
	Examiner	Art Unit	
	Lora E. Barnhart	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-19 and 21-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-19 and 21-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/11/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The reply received 9/27/05 amending claims 1, 2, 4, 6, 8, 9, 11, 13-15, 17-19, 21, and 24; and canceling claims 12 and 20 is acknowledged. Claims 1-11, 13-19, and 21-28 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. Prior art references can be found in a prior Office action, unless otherwise noted.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 7/11/05 with the appropriate fee was filed after the mailing date of the first Office action on the merits on 3/29/05. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

The objections to claims 2, 4, and 11 are withdrawn in light of the amendments thereto.

Claim Rejections - 35 USC § 112

The rejection of claims 1-9 and 11-28 under 35 U.S.C. §112, second paragraph, is withdrawn in light of the claim amendments.

Double Patenting

Claims 1-11, 13-19, and 21-28 remain provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 20, 21, 25-28, 34-47, 50, 54, 57, 58, and 62-82 of copending, commonly-

assigned Application No. 10/366,671. Applicant's request to hold this rejection in abeyance is noted.

Claim Rejections - 35 USC § 102

The rejection of claims 1-10, 14-19, and 21-28 under 35 U.S.C. §102(b) as being anticipated by Boyse et al. (U.S. '681) is withdrawn in light of the claim amendments.

Claim Rejections - 35 USC § 103

Claims 1-11, 13-19, and 21-28 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Boyse et al. taken in light of Kondo, Sakabe et al., Gluckman et al. (1998), and Gluckman et al. (2001). The claims are drawn to a method of treating an individual comprising administering a composition comprising cord blood or cord blood-derived stem cells, wherein said administration delivers at least 10 billion nucleated cells or at least 1 billion stem cells. In some dependent claims, the stem cells express specific markers. In some dependent claims, the cells are treated with a growth factor, in some cases a specific growth factor. In some dependent claims, the patient has a specific disease or disorder. Some claims are drawn to a treatment of myelodysplasia comprising administering cord blood or cord blood-derived stem cells to a patient in need thereof. In some dependent claims, the cells are preconditioned for a specific length of time prior to administration. In some dependent claims, at least 30 billion or 20 billion nucleated cells, or 3 billion or 2 billion stem cells, are delivered. In some dependent claims, the cells are not HLA-typed prior to administration.

As discussed previously, Boyse et al. teach the hematopoietic reconstitution of irradiated mice with blood from fetal and neonatal mice (Examples 6.11, *inter alia*).

Sakabe et al. is cited as evidence that blood stem cells comprise CD34+ CD38+ cells and CD34+ CD38- cells (Table 2, for example), and Kondo et al. is cited as evidence that blood comprises growth factors (p. 1341, column 2, paragraph 2).

Boyse et al. do not teach administration of over 5 billion nucleated cells. Boyse et al. do not address the need for HLA typing when the cord blood is not from autogenous sources, nor does it discuss any type of preconditioning before implantation of the donor cells.

Gluckman et al. (1999) teach that a high number of transplanted nucleated cells is a good prognostic factor for a successful procedure (p. 9, column 2 through p. 10, column 2). Gluckman et al. (2001) teach that graft-versus-host disease (GVHD) in unrelated cord blood transfusions is usually neither severe nor chronic, indicating that HLA matching may not be necessary for cord blood transfusions (p. 153, columns 1 and 2).

While Boyse et al. do not teach treating myelodysplasia or treating patients with the specific conditions recited in claims 14-23, they do perform the same administration of cord blood cells as in the present application (Examples 2 and 3). Because the method step of Boyse et al. (i.e. administration of cord blood) is the same as the instantly claimed step, Boyse et al. inherently teach the same process of treatment of myelodysplasia and treatment of patients diagnosed with various disorders as in the current application. Boyse et al. therefore anticipate the treatments as instantly claimed.

A person of ordinary skill in the art would have had a reasonable expectation of success in administering a composition comprising cord blood or cord blood-derived

stem cells as in Boyse et al. without performing HLA typing because Gluckman et al. (2001) teach that said typing is not a major factor for selecting a cord blood donor (p. 153, column 2, paragraph 2). The skilled artisan would have been motivated to transplant blood without performing HLA typing first for the expected benefit that cord blood from any donor could be transfused to any needy recipient without threat of severe, chronic GVHD. Said artisan would be further motivated to use cord blood cells that are not a perfect HLA type match for the expected benefit of increasing the number of available cells per transfusion by pooling together cord blood from several donors.

The selection of the number of nucleated cells transfused clearly would have been a routine matter of optimization on the part of the artisan of ordinary skill, said artisan recognizing that the chances of success in transfusion is directly related to the number of stem cells administered (Gluckman et al. (2001), p. 9 and 10). The skilled artisan would be motivated to attempt a transfusion with as many cells as possible. A holding of obviousness over the cited claims is therefore clearly required.

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to perform the transfusions of U.S. '681 with as many cells as possible, from as many donors as are available, because Gluckman et al. (1999) teach that the success of transplantation is directly related to the number of stem cells infused into the recipient, and because Gluckman et al. (2001) teach that HLA typing is not necessary for avoiding GVHD in cord blood recipients.

Therefore, the invention as a whole would have been *prima facie* obvious to a person of ordinary skill at the time the invention was made.

Applicant alleges that the cited prior art does not teach administration of at least 10 billion nucleated cells or 1 billion stem cells (Remarks, page 7, paragraph 3). Applicant further alleges that the cited prior art does not teach or suggest treatment of the various conditions in claims 14-19 (Remarks, page 8, paragraph 1). Finally, applicant alleges that Boyse et al. teach that the use of smaller doses of cord blood or cord blood-derived stem cells may be feasible (Remarks, page 8, paragraph 2). These arguments have been fully considered, but they are not persuasive.

The examiner concedes that none of the cited prior art references teach the administration of the claimed numbers of cells. Applicant has not addressed, however, the examiner's assertion that the selection of the number of cells to administer would have been a matter of routine optimization for the person of ordinary skill in the art. The instant claim is drawn to an administration in which at least 10 billion total nucleated cells are delivered; by applicant's own admission, Gluckman et al. (1998) teaches the delivery of as many as 500 million total nucleated cells. The instant claim, therefore, reads on repeating the administration of Gluckman et al. (1998) 20 times. Clearly, the person of ordinary skill in the art would repeat a given administration, or increase the number of cells per administration, in order to achieve the desired result, for example, reconstituting the hematopoietic system. Indeed, according to the specification, the number of cells administered is an optimizable variable and depends at least on body weight (Specification as filed, page 27, lines 8-11). A substantive evidentiary showing in which a single administration of the claimed number of cells yields unexpected results compared to administrations such as those in the prior art would obviate this rejection.

Applicant's allegations regarding the teachings of Boyse et al. are incorrect. Boyse et al. teaches that the administration of a certain small volume of newborn mouse blood can reconstitute the adult mouse's hematopoietic system as effectively as a larger volume of fetal or neonatal mouse blood (Examples 6.11.1, 6.11.2, and 6.11.4), but Boyse et al. does not teach that the volumes of blood are equal in terms of nucleated cell concentration or stem cell concentration. In fact, the concentration of stem cells in blood varies by developmental stage. As such, the person of ordinary skill in the art would not interpret the teachings of Boyse et al. as implying that administering fewer cells would be desirable over administering many cells.

Applicant's arguments regarding the treatment of various diseases are unpersuasive for at least the reasons given in the first Office action. The administration step (*i.e.*, administration of a certain number of cells) is identical in all of these claims, so all outcomes of said administration step are inherent effects.

No claims are allowed. No claims are free of the art.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lora E. Barnhart whose telephone number is 571-272-1928. The examiner can normally be reached on Monday-Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SANDRA E. SAUCIER
PRIMARY EXAMINER

Lora E Barnhart

leb